Doosan Infracore
Machine Tools

PUMA VTS1620/1620M

Large Vertical Turning Center with RAM Head Spindle

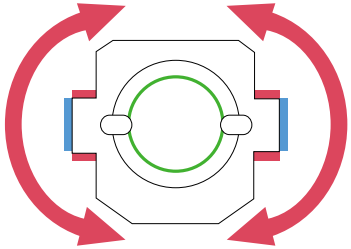
Structure PUMA VTS1620/1620M

The robust design of the machine provides long term high precision and machining accuracy.

Ram guide

Large square cross section

250 x 308 mm (9.8 x 12.1 inch)



Wide ram guide for high torque

Table bearing

• Internal geared table drives generate tremendous torque

Max. table power & turque

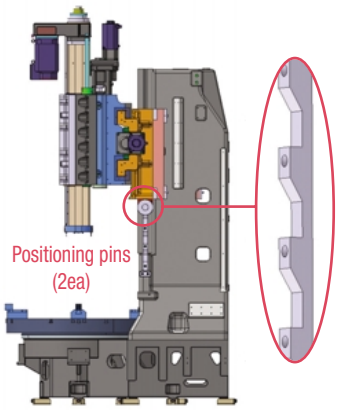
45 kW, 20119 N·m
(60 Hp, 14848 ft-lbs)

Max. table speed

250 r/min (Power transmission 2-step G/box)

The table spindle contruction incorporates an 914.4mm (36.0 inch) diameter crossed roller bearing to with stand high axial and radial loads. In addition, a double labyrinth seal protects the spindle from coolant contamination.

Cross-rail up down [W-axis]



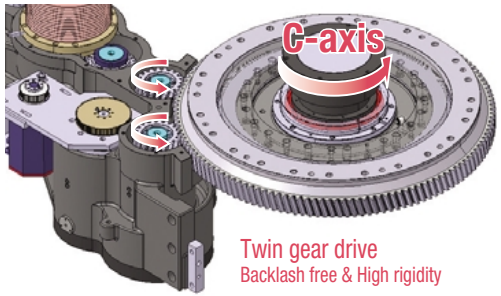
Cross-rail elevation

200 mm x 4 steps
= 800 mm
(7.87 inch x 4 steps
= 31.5 inch)

(Hydraulic Cylinder Drive)

The cross rail elevates in 200mm (7.9 inch) increments to achieve high squarness between the ram and the cross rail.

Rotary tool & C-axis



Twin gear drive
Backlash free & High rigidity

The rotary tool spindle also makes vertical turning more productive than ever. Servo driven C-axis control ensures perfect mill, drill, and tap on PUMA VTS1620M vertical turning center.

Max. rotary tool power & torque

18.5 kW, 262 N·m {687 N·m opt. }
(25 Hp, 193 ft-lbs {507 ft-lbs opt. })

Max. C-axis power & torque

4 kW, 26400 N·m (5.4 Hp, 19483.2 ft-lbs)

Max. rotary tool speed

3000 r/min {2500 r/min opt. }

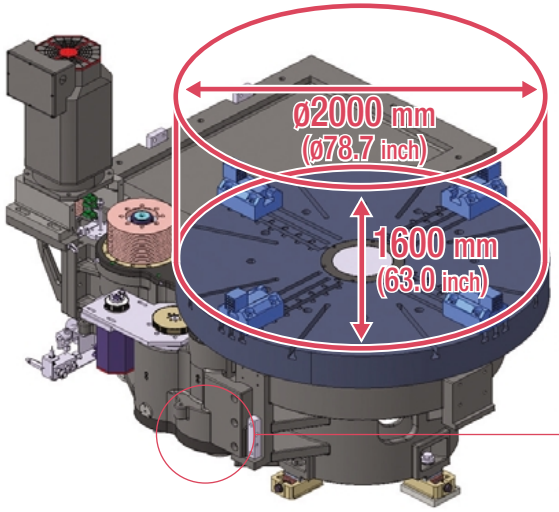
Max. C-axis rapid

900 deg/min

Machining Capacity PUMA VTS1620/1620M

The VTS machines have a maximum cutting diameter of to 2000 mm (78.7 inch) and have a generous work envelope with cutting heights ranging up to 1600 mm (63.0 inch) on standard machines.

Axis travel

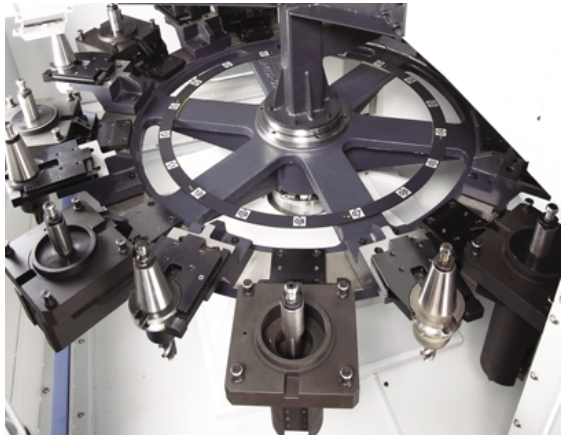


Max. turning dia.	ø 2000 mm (ø78.7 inch)
Max. turning height	1600 mm (63.0 inch)
Max. allowable load	10000 kg (22045.9 lb)
Z-axis	960 mm (37.8 inch)
W-axis	800 mm (31.5 inch)
X-axis	1727 mm (68.0 inch)

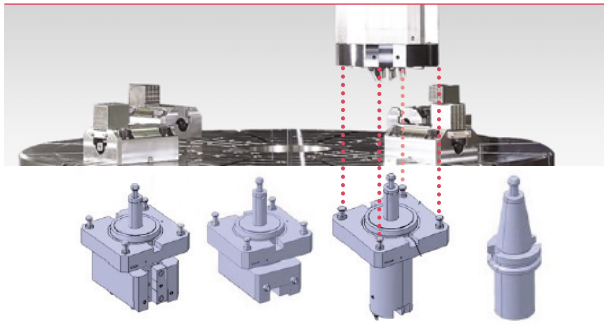
Internal mounted 2-step gear box delivering high torque for heavy duty machining

ATC Magazine

Driving system	servo motor
No. of tool stations	18 stations
Magazine Indexing	3 r/min [1.2 s per 1 station]
Max. tool length	400 mm (15.7 inch) [VTS1620]
	350 mm (13.8 inch) [VTS1620M]



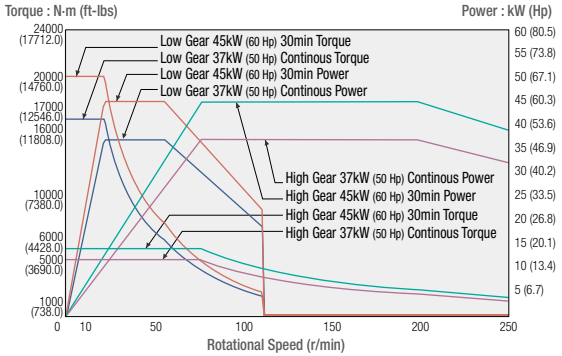
Tool clamping



Turning tool holder :
6.5 ton (14330 lb) [5-collet] / ASA A2-8 Taper & 2-key
Milling holder :
2.5 ton (5512 lb) [Center collet] / MAS BT50

Main table

Max. table motor & torque
45 kW, 20119 N·m (60 Hp, 14848 ft-lbs)



Machine Specifications

	Description		Unit	PUMA VTS1620	PUMA VTS1620M
Capacity	Table diameter		mm (inch)	1600 (63.0)	
	Max. swing		mm (inch)	2000 (78.7)	
	Max. turning diameter		mm (inch)	2000 (78.7)	
	Max. turning height		mm (inch)	1600 (63.0)	
	Max. table load		kg (lb)	10000 (22045.9)	
	Max. torque of table		N·m (ft-lbs)	20119 (14847.8)	
	Max. cutting force		N (lbs)	27000 (6069.6)	
Rotary tool	Max. rotary tool spindle torque		N·m (ft-lbs)	-	262 (193.4)
	Max. roatry tool spindle speed		r/min	-	3000
	Max. diameter for drilling		mm (inch)	-	60 (2.4)
Travel	Horizontal travel (To right from table center)		mm (inch)	1600 (63.0)	
	Horizontal travel (To left from table center)		mm (inch)	127 (5.0)	
	Vertical travel of ram		mm (inch)	960 (37.8)	
	Vertical travel of crossrail		mm (inch)	800 (31.5)	
	Crossrail positioning pitch		mm (inch)	200 (7.9)	
Ram	Ram size		mm (inch)	250 x 308 (9.8 x 12.1)	
	Min. through hole inside diameter		mm (inch)	320 (12.6)	
Table	Table speed (Low range)		r/min	250	
	Number of table speed		step	2 x infinitely variable	
	Table speed for indexing (C axis)		deg/min	-	900
Magazine	No. of tool stations		ea	18	
	Max. weight of tool holder		kg/1pc	50	
	Max. length of tool holder		mm (inch)	400 (15.7)	350 (13.8)
	Tool shank size		mm (inch)	32 (1.3)	
	Type of tool clamping			ASA A2-8+2Key	MAS BT50/ISO 7/24 n0.50
	Tool clamping power		kg (lb)	7500 (16534.4)	2500 (5511.5)
Feedrate	Rapid traverse	Horizontal (X-axis)	m/min (ipm)	15 (590.6)	
		Vertical (Z-axis)	m/min (ipm)	12 (472.4)	
Motors	Spindle motor	Main table	kW (Hp)	37/45 (49.6/60.3) [a40i]	
		Rotary tool	kW (Hp)	-	15/18.5 (20.1/24.8)
	Axis motor	X-Axis	kW (Hp)	4 (5.4)	
		Z-Axis	kW (Hp)	4 (5.4)	
		C-Axis	kW (Hp)	-	4 (5.4)
	NC system			DOOSAN Fanuc i series	

Standard Features

- 4-jaw independent manual chuck
- Air blast for tool clamp
- Column top handrail and ladder
- Coolant flushing for bed
- Coolant supply equipment
- Cooling system for table
- Crossrail positioning unit
- Hand tool kit, including small hand tool for operations
- Hydraulic power unit
- Leveling jack screw & plates
- Lubrication equipment
- M-code programming for vertical crossrail driving
- Signal tower (yellow, red, green)
- Splash guard (Open top)
- Standard tooling kit (Tool holders)
- Work light

Optional Features

- Linear scale (X, Z-axis)
- Airconditioner for electrical cabinet
- Auto tool presetter (Linear type)
- Oil skimmer (Belt type)
- Oil mist collector
- Oil mist for tool
- Flow coolant
- Automatic door with safety edge (Bumper switch)
- Chip bucket
- Coolant gun
- Parts probe
- NC system : 32i-A
- Air blast gun
- Line filter for coolant
- Chip conveyer
- Hydraulic chuck

NC Unit Specifications Doosan Fanuc i series

AXES CONTROL	
- Controlled axes	X, Z *1, X, Z, C axis*2
- Simultaneous controlled axes	2 (2axes), 3 axes
- Axis control by PMC**	
- Cs contouring control**	
- Torque control	
- Stroke limit check before move	
- Mirror image	
INTERPOLATION FUNCTIONS	
- Nano interpolation	
- Reference position return check	G27
- Thread cutting / Synchronous cutting	
- Cylindrical interpolation**	
- High speed skip	

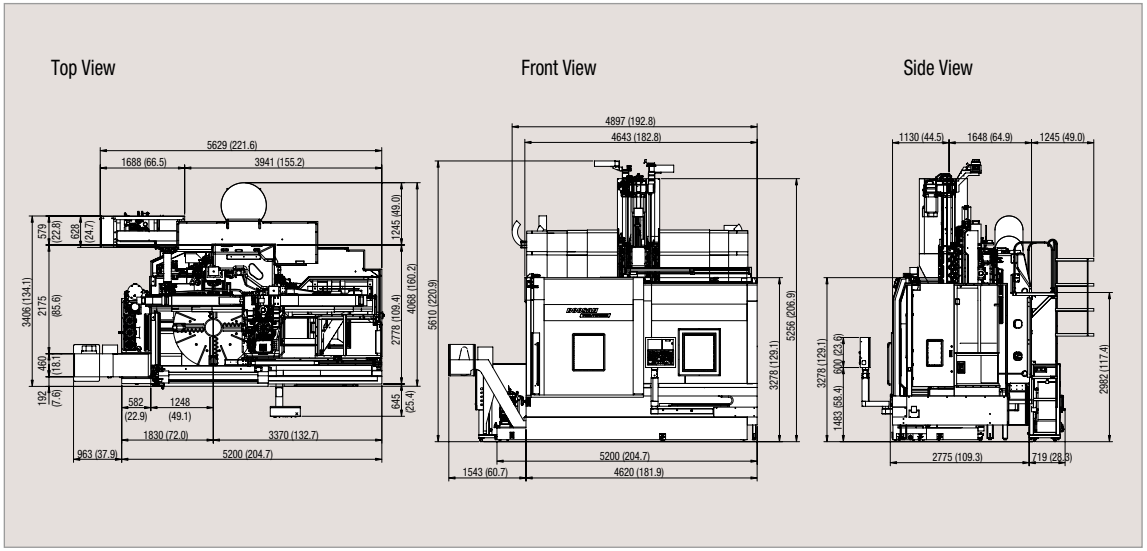
- Linear interpolation	G01
- Multiple threading	
- Polygon turning	
FEED FUNCTION	
- Feedrate override (10% unit)	0 - 200%
- Rapid traverse override	F0, 25, 100%
PROGRAM INPUT	
- Maximum program dimension	±9 digit
- Multiple repetitive canned cycle	G70 - G76
- Optional block skip	1piece
- Coordinate system setting	G50
- Work coordinate system	G52 - G59
- Plane selection	G17, G18, G19
- Program number	04 digit

- Programmable data input	G10
- SUB program call	10 folds nested
- Work coordinate system	G52 - G59
TOOL FUNCTION / TOOL COMPENSATION	
- Automatic tool offset	
- T-code function	T2 + 2 digits
- Tool offset	G43, G44, G49
- Tool offset pairs	64 pairs
EDITING OPERATION	
- Number of registered programs	400 ea
- Part program storage length	1,280m (512kB)
SETTING AND DISPLAY	
- Program name display	31characters
- Run hours / parts count display	

OTHERS	
- Display unit	
- PMC system	10.4" Color LCD/MDI
- Manual GuideOi	PMC-OiD
OPTIONAL SPECIFICATIONS	
- Controlled axes expansion(total)	Max.4axes
- Simultaneous controlled axes expansion(total)	Max.4axes
- Advanced preview control	
- Fast ethernet / Data server	

External Dimensions

Unit : mm (inch)



http://domss.doosaninfracore.com

Doosan Infracore Machine Tools

Head Office : Doosan Tower 23rd FL., 18-12, Euljiro-6Ga, Jung-Gu, Seoul, Korea 100-730 **Tel :** ++82-2-3398-8671 / 8652 / 8680 / 8660 **Fax :** ++82-2-3398-8699 **E-mail :** master@domss.com

Doosan Infracore America Corp.: 8 York Avenue, West Caldwell, NJ 07006, U.S.A. **Tel :** ++1-973-618-2500 **Fax :** ++1-973-618-2501 **E-mail :** master@domss.com

Doosan Infracore Germany GmbH : Hans-Böckler-Strasse 29, D-40764 Langenfeld-Fuhrkamp, Germany. **Tel :** ++49-2173-8509-0 **Fax :** ++49-2173-8509-60 **E-mail :** master@domss.com

Doosan Infracore Yantai Co., LTD : 13 Building, 140 Tianlin Road, Xuhui District, Shanghai, China (200233) **Tel :** ++86-21-6440-3384 (808, 805) **Fax :** ++86-21-6440-3389 **E-mail :** master@domss.com